GenCore version 5.1.3

OM nucleic - nucleic search, using sw model

Run on: February 16, 2003, 15:49:44 ; Search time 215.94 Seconds
(without alignments)
14704.597 Million cell updates/sec

Title: US-09-497-967-102
Perfect score: 1410
Sequence: 1 atgaagaacaacatcctggt.....cttactacctgctgtaataa 1410

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 2185239 seqs, 1125999159 residues

Total number of hits satisfying chosen parameters: 4370478

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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23: /SIDS2/gcgdata/geneseq/geneseqn-embl/NA2001B.DAT:*
24: /SIDS2/gcgdata/geneseq/geneseqn-embl/NA2002.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

	Result No.	Score	% Query Match	Length	DB	ID	Description
	1	1410	100.0	1410	21	AAA97089	Synthetic I. Multi
	2	1404	99.6	1404	21	AAA97040	55kD i-antigen syn
	3	1400.8	99.3	1404	21	AAA97065	Synthetic 55kD i-a
	4	784.4	55.6	1410	21	AAA97060	55kD i-antigen cod
	5	782.6	55.5	1404	21	AAA97038	55kD i-antigen nuc
	6	782.6	55.5	1404	21	AAA52136	55 kDa i-antigen g
	7	138	9.8	138	21	AAA97075	G5 synthetic gene
c	8	123	8.7	123	21	AAA97076	G5 synthetic gene
	9	105	7.4	117	21	AAA97071	G5 synthetic gene
c	10	104	7.4	104	21	AAA97072	G5 synthetic gene
	11	100	7.1	100	21	AAA97073	G5 synthetic gene
c	12	100	7.1	100	21	AAA97080	G5 synthetic gene
	13	99	7.0	99	21	AAA97077	G5 synthetic gene
c	14	95	6.7	95	21	AAA97074	G5 synthetic gene
c	15	95	6.7	95	21	AAA97078	G5 synthetic gene
	16	95	6.7	95	21	AAA97083	G5 synthetic gene
	17	94	6.7	94	21	AAA97079	G5 synthetic gene
	18	94	6.7	94	21	AAA97085	G5 synthetic gene
c	19	92	6.5	92	21	AAA97084	G5 synthetic gene
c	20	92	6.5	92	21	AAA97086	G5 synthetic gene
	21	92	6.5	92	21	AAA97087	G5 synthetic gene
c	22	90	6.4	90	21	AAA97082	G5 synthetic gene
	23	89	6.3	89	21	AAA97081	G5 synthetic gene
c	24	86	6.1	95	21	AAA97088	G5 synthetic gene
	25	63.2	4.5	1326	21	AAA97036	48kD i-antigen nuc
	26	63.2	4.5	2486	21	AAA97037	Nucleotide sequenc
	27	63.2	4.5	2811	21	AAA52134	pBICH3 construct c
	28	61.6	4.4	1326	21	AAA52135	48 kDa i-antigen g
	29	38.2	2.7	349980	22	AAH68528	C glutamicum codin
	30	38.2	2.7	4403765	22	AAI99683	Mycobacterium tube
	31	38.2	2.7	4411529	22	AAI99682	Mycobacterium tube
c	32	37.4	2.7	18609	22	AAS21769	Human gene for col
	33	37.2	2.6	3946	18	AAT93610	Mycobacterium tube
c	34	37	2.6	785	23	ABL28537	Drosophila melanog
c	35	37	2.6	1829	23	ABL28536	Drosophila melanog
	36	36.2	2.6	913	18	AAT91476	Mycobacterium tube
	37	36.2	2.6	913	18	AAT91413	Mycobacterium tube
	38	36.2	2.6	913	19	AAV64462	M. tuberculosis im
	39	36.2	2.6	913	19	AAV44354	Mycobacterium tube
	40	36.2	2.6	913	20	AAZ19264	M. tuberculosis an
	41	36.2	2.6	913	20	AAZ19052	M. tuberculosis re
c	42	35.8	2.5	1954	21	AAC44830	Arabidopsis thalia
c	43	35.8	2.5	2017	21	AAZ56972	Arabidopsis pyruva
	44	35.8	2.5	2413	19	AAV41261	Chlamydomonas rein
c	45	35.4	2.5	4863	22	AAK52286	Human polynucleoti

ALIGNMENTS

RESULT 1
AAA97089
ID AAA97089 standard; DNA; 1410 BP.
XX
AC AAA97089;
XX
DT 18-DEC-2000 (first entry)
XX
DE Synthetic I. Multifiliis G5 isolate i-antigen gene.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW white spot disease; freshwater fish; immune response; infection control.
XX
OS Ichthyophthirius multifiliis.
OS Synthetic.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.

XX
PI Clark TG, Dickerson HW, Lin T;
XX
DR WPI; 2000-506071/45.
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
XX
PS Example 5; Figure 2b; 144pp; English.
XX
CC This invention relates to novel i-antigen polypeptide sequences.
CC I-antigens or immobilisation antigens ar common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 1410 BP; 321 A; 418 C; 339 G; 332 T; 0 other;

Query Match 100.0%; Score 1410; DB 21; Length 1410;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1410; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Db       1 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60

Qy      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120
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Db      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120

Qy     121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180
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Qy     181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240
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Qy     241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300
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Qy     301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360
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Qy     661 AACGTGGCTCAGGCTACCCTGGGAAACGACGCTACCATCACCGCTCAGTGTAACGTGGCT 720
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Qy     721 TGTCCTGACGGAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACCGAG 780
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Qy     781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840
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Db     781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840

Qy     841 TCTACCTGTCTGCCTTGTCCTGCTAACAAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900
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Qy     961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020
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Qy    1381 CTGCTGATCTCTTACTACCTGCTGTAATAA 1410
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Db    1381 CTGCTGATCTCTTACTACCTGCTGTAATAA 1410
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RESULT 2
AAA97040
ID AAA97040 standard; DNA; 1404 BP.
XX
AC AAA97040;
XX
DT 18-DEC-2000 (first entry)
XX
DE 55kD i-antigen synthetic gene.
XX

KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW white spot disease; freshwater fish; immune response; infection control.
XX
OS Ichthyophthirius multifiliis.
OS Synthetic.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.
XX
PI Clark TG, Dickerson HW, Lin T;
XX
DR WPI; 2000-506071/45.
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
XX
PS Claim 5; Page 102; 144pp; English.
XX
CC This invention relates to novel i-antigen polypeptide sequences.
CC I-antigens or immobilisation antigens ar common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 1404 BP; 317 A; 418 C; 339 G; 330 T; 0 other;

Query Match 99.6%; Score 1404; DB 21; Length 1404;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1404; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120
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Db      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120

Qy     121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180
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Db     121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180

Qy     181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240
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Qy     241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300
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Qy     301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360
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Db     301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360

Qy     361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420
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Db     361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420

Qy     421 CCTGTGAACCGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAG 480
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Qy     481 TGTAACGTGGCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTG 540
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Qy     901 GCTGCTACCCTGGCTAAGCAGTGTAACATCGCTTGTCCTGACGGAACCGCTATCGCTTCT 960
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Qy     961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020
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Qy    1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080

Qy    1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140

Qy    1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200

Qy    1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260

Qy    1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
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          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320

Qy   1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db   1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380

Qy   1381 CTGCTGATCTCTTACTACCTGCTG 1404
          |||||||||||||||||||||||||
Db   1381 CTGCTGATCTCTTACTACCTGCTG 1404


RESULT 3
AAA97065
ID   AAA97065 standard; DNA; 1404 BP.
XX
AC   AAA97065;
XX
DT   18-DEC-2000  (first entry)
XX
DE   Synthetic 55kD i-antigen gene sequence.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW   white spot disease; freshwater fish; immune response; infection control.
XX
OS   Ichthyophthirius multifiliis.
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
PT   Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT   multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT   infection in fish  -
XX
PS   Example 5; Figure 13; 144pp; English.
XX
CC   This invention relates to novel i-antigen polypeptide sequences.
CC   I-antigens or immobilisation antigens ar common to a variety of
CC   hymenostomatid ciliates and their expression varies in response to
CC   environmental stimuli. This invention relates to i-antigens in
CC   Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC   of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
CC   antibodies capable of binding to the nucleotide sequences and a method
CC   for identifying I. multifiliis serotypes using the nucleotide sequences.
CC   A composition (containing the i-antigen nucleotide) capable of eliciting
CC   an immune response in fish is useful for prophylaxis, treatment or for
CC   controlling I. multifiliis infection in fish. Polynucleotide or protein
CC   vaccines comprising a portion of the amplified product encoding an
CC   antigenic i-antigen polypeptide obtained is also useful for treating or
CC   preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 1404 BP; 317 A; 418 C; 339 G; 330 T; 0 other;

  Query Match             99.3%;  Score 1400.8;  DB 21;  Length 1404;
  Best Local Similarity   99.9%;  Pred. No. 0;
  Matches 1402;  Conservative    0;  Mismatches    2;  Indels    0;  Gaps    0;

Qy       1 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60
           ||||||||||||||| ||||||||||||||||||||||||||||||||||||||||||||
Db       1 ATGAAGAACAACATCCCGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60

Qy      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120

Qy     121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180

Qy     181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240

Qy     241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300

Qy     301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360

Qy     361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420

Qy     421 CCTGTGAACCGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAG 480
           |||||||||||| ||||||||||||||||||||||||||||||||||||||||||||||||||
Db     421 CCTGTGAACCGTGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAG 480

Qy     481 TGTAACGTGGCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTG 540
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     481 TGTAACGTGGCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTG 540

Qy     541 CGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGAAACAACGGA 600
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     541 CGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGAAACAACGGA 600

Qy     601 AACACCCCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCT 660
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     601 AACACCCCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCT 660

Qy     661 AACGTGGCTCAGGCTACCCTGGGAAACGACGCTACCATCACCGCTCAGTGTAACGTGGCT 720
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     661 AACGTGGCTCAGGCTACCCTGGGAAACGACGCTACCATCACCGCTCAGTGTAACGTGGCT 720

Qy     721 TGTCCTGACGGAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACCGAG 780
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     721 TGTCCTGACGGAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACCGAG 780

Qy     781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840

Qy     841 TCTACCTGTCTGCCTTGTCCTGCTAACAAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     841 TCTACCTGTCTGCCTTGTCCTGCTAACAAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900

Qy     901 GCTGCTACCCTGGCTAAGCAGTGTAACATCGCTTGTCCTGACGGAACCGCTATCGCTTCT 960
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     901 GCTGCTACCCTGGCTAAGCAGTGTAACATCGCTTGTCCTGACGGAACCGCTATCGCTTCT 960
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Qy     961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020

Qy    1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080

Qy    1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140

Qy    1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200

Qy    1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260

Qy    1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320

Qy    1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380

Qy    1381 CTGCTGATCTCTTACTACCTGCTG 1404
           ||||||||||||||||||||||||
Db    1381 CTGCTGATCTCTTACTACCTGCTG 1404
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RESULT 4
AAA97060
ID   AAA97060 standard; DNA; 1410 BP.
XX
AC   AAA97060;
XX
DT   18-DEC-2000  (first entry)
XX
DE   55kD i-antigen coding region.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW   white spot disease; freshwater fish; immune response; infection control.
XX
OS   Ichthyophthirius multifiliis.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
PT   Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT   multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT   infection in fish -
XX
PS   Disclosure; Figure 2; 144pp; English.
XX
CC   This invention relates to novel i-antigen polypeptide sequences.
CC   I-antigens or immobilisation antigens ar common to a variety of
CC   hymenostomatid ciliates and their expression varies in response to
CC   environmental stimuli. This invention relates to i-antigens in
CC   Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC   of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
CC   antibodies capable of binding to the nucleotide sequences and a method
CC   for identifying I. multifiliis serotypes using the nucleotide sequences.
CC   A composition (containing the i-antigen nucleotide) capable of eliciting
CC   an immune response in fish is useful for prophylaxis, treatment or for
CC   controlling I. multifiliis infection in fish. Polynucleotide or protein
CC   vaccines comprising a portion of the amplified product encoding an
CC   antigenic i-antigen polypeptide obtained is also useful for treating or
CC   preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 1410 BP; 449 A; 240 C; 259 G; 462 T; 0 other;
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  Query Match             55.6%;  Score 784.4;  DB 21;  Length 1410;
  Best Local Similarity   72.3%;  Pred. No. 2.9e-216;
  Matches 1019;  Conservative    0;  Mismatches  391;  Indels    0;  Gaps    0;

Qy       1 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60
           ||||| || || ||  | || ||  |||| || ||  | || |||||  | || || |||
Db       1 ATGAAAAATAATATTTTAGTAATATTGATTATTTCATTATTTATCAATTAAATTAAATCT 60

Qy      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120
           ||||| |||||||| ||||| || || ||||| || ||| | || || || || |||||
Db      61 GCTAATTGTCCTGTTGGAACTGAAACTAACACAGCCGGATAAGTTGATGATCTAGGAACT 120

Qy     121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180
           ||||| || ||||| || ||| |||| ||||| || || || || ||||||||||||||
Db     121 CCTGCAAATTGTGTTAATTGTTAGAAAAACTTTTATTATAATAATGCTGCTGCTTTCGTT 180

Qy     181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240
           ||||| |||  ||| ||||| ||||||||  | || || || ||||| ||| | || ||
Db     181 CCTGGTGCTAGTACGTGTACACCTTGTCCATAAAAAAAAGATGCTGGTGCTTAACCAAAT 240

Qy     241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300
           || |||||||| |||||  | || ||  | |||||||| || || |||||||| |||||
Db     241 CCACCTGCTACTGCTAATTTAGTCACATAATGTAACGTTAAATGCCCTGCTGGTACCGCA 300

Qy     301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360
           || || || ||||| || || || || || || ||||| || ||||| || ||| | ||
Db     301 ATTGCAGGTGGAGCAACAGATTATGCAGCAATAATCACAGAATGTGTTAATTGTAGAATT 360

Qy     361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420
           || || || || || || ||||| || || || || || |||  ||| || || ||||||
Db     361 AATTTTTATAATGAAAATGCTCCAAATTTTAATGCAGGTGCTAGTACATGCACAGCTTGT 420

Qy     421 CCTGTGAACCGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAG 480
           || || ||| | || || || ||  |||| ||||| || || |||||||| || ||  |
Db     421 CCGGTAAACAGAGTTGGTGGTGCATTGACTGCTGGTAATGCCGCTACCATAGTCGCATAA 480

Qy     481 TGTAACGTGGCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTG 540
           |||||||| || |||||||| || || || || || || || ||||| || || || || ||
Db     481 TGTAACGTCGCATGTCCTACTGGTACTGCACTTGATGATGGAGTAACTACTGATTATGTT 540

Qy     541 CGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGAAACAACGGA 600
           | || ||||| || ||||| || ||| | || ||||| ||||| || || || || ||
Db     541 AGATCATTCACAGAATGTGTTAAATGTAGACTTAACTTTTACTATAATGGTAATAATGGT 600

Qy     601 AACACCCCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCT 660
           || || |||||||| || || ||   | | || || |||||||| || || || ||||||
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Db    601 AATACTCCTTTCAATCCAGGTAAAAGTTAATGCACACCTTGTCCGGCAATTAAACCTGCT 660

Qy    661 AACGTGGCTCAGGCTACCCTGGGAAACGACGCTACCATCACCGCTCAGTGTAACGTGGCT 720
          || || ||| | |||||  | || || || ||||| || |||||  | ||||||| ||
Db    661 AATGTTGCTTAAGCTACTTTAGGTAATGATGCTACAATAACCGCATAATGTAACGTTGCA 720

Qy    721 TGTCCTGACGGAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACCGAG 780
          || ||||| || || ||   |||||||||||| || || ||||| || || ||||| ||
Db    721 TGCCCTGATGGTACTATAAGTGCTGCTGGAGTAAATAATTGGGTAGCACAAAACACTGAA 780

Qy    781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840
          ||||| || |||||||||||||| |||| || || |||||||| ||||| || || ||
Db    781 TGTACTAATTGTGCTCCTAACTTTTACAATAATAATGCTCCTAATTTCAATCCAGGTAAT 840

Qy    841 TCTACCTGTCTGCCTTGTCCTGCTAACAAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900
            ||| || || ||||| || || || || || || || ||||| || || || || || ||
Db    841 AGTACATGCCTACCTTGCCCAGCAAATAAAGATTATGGTGCTGAAGCCACTGCAGGTGGT 900

Qy    901 GCTGCTACCCTGGCTAAGCAGTGTAACATCGCTTGTCCTGACGGAACCGCTATCGCTTCT 960
          || |||||  | || ||  | ||||| || || || ||||| || || || || ||| |
Db    901 GCCGCTACTTTAGCCAAATAATGTAATATTGCATGCCCTGATGGTACTGCAATTGCTAGT 960

Qy    961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020
          ||||| || || || || ||  |  | || || ||||| || |||||||||||||| ||
Db    961 GGAGCAACTAATTATGTAATATTATAAACAGAATGTCTAAATTGTGCTGCTAACTTTTAT 1020

Qy   1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080
          || || || || || ||| |||| |||  |  | | || || || ||||| || || ||
Db   1021 TTTGATGGTAATAATTTCTAGGCAGGAAGTAGTAGATGCAAAGCATGTCCAGCAAATAAA 1080

Qy   1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140
          ||  | || |||||  || || || || || ||||| | || ||  | |||||  ||
Db   1081 GTTTAAGGCGCTGTAGCAACTGCAGGTGGTACTGCTACTTTAATTGCATAATGTGCCCTT 1140

Qy   1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200
          || || |||||||| || || || ||||| ||||| || ||||| || ||  | || ||
Db   1141 GAATGCCCTGCTGGTACTGTACTCACCGATGGAACAACATCTACTTATAAATAAGCAGCA 1200

Qy   1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260
          ||||| ||||| || |||||||| ||||| || || || ||  | || || ||||| ||
Db   1201 TCTGAATGTGTTAAATGTGCTGCCAACTTTTATACTACAAAATAAACTGATTGGGTAGCA 1260

Qy   1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
          || || || || |||||   |||||| || ||  | || ||||| ||||| |||||  |
Db   1261 GGTATTGATACATGTACTAGTTGTAATAAAAAATTAACTTCTGGCGCTGAAGCTAATTTA 1320

Qy   1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380
          ||||| |||||||| || || ||  | ||||| |||||||| ||  | || || ||  |
Db   1321 CCTGAATCTGCTAAAAAAAATATATAATGTGATTTCGCTAATTTTTTATCAATTTCCTTA 1380

Qy   1381 CTGCTGATCTCTTACTACCTGCTGTAATAA 1410
            |  |||| ||||| ||  |  | | || |
Db   1381 TTATTGATTTCTTATTATTTATTATGATGA 1410


RESULT 5
AAA97038
ID   AAA97038 standard; DNA; 1404 BP.
XX
AC   AAA97038;
XX
DT   18-DEC-2000  (first entry)
XX
DE   55kD i-antigen nucleotide sequence.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW   white spot disease; freshwater fish; immune response; infection control.
XX
OS   Ichthyophthirius multifiliis.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.

XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
PT   Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT   multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT   infection in fish
XX
PS   Claim 5; Figure 3; 144pp; English.
XX
CC   This invention relates to novel i-antigen polypeptide sequences.
CC   I-antigens or immobilisation antigens ar common to a variety of
CC   hymenostomatid ciliates and their expression varies in response to
CC   environmental stimuli. This invention relates to i-antigens in
CC   Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC   of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
CC   antibodies capable of binding to the nucleotide sequences and a method
CC   for identifying I. multifiliis serotypes using the nucleotide sequences.
CC   A composition (containing the i-antigen nucleotide) capable of eliciting
CC   an immune response in fish is useful for prophylaxis, treatment or for
CC   controlling I. multifiliis infection in fish. Polynucleotide or protein
CC   vaccines comprising a portion of the amplified product encoding an
CC   antigenic i-antigen polypeptide obtained is also useful for treating or
CC   preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 1404 BP; 447 A; 240 C; 257 G; 460 T; 0 other;

  Query Match           55.5%;  Score 782.6;  DB 21;  Length 1404;
  Best Local Similarity  72.5%;  Pred. No. 9.6e-216;
  Matches 1013;  Conservative    0;  Mismatches  384;  Indels    0;  Gaps    0;

Qy      1 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60
          ||||| || || ||  | || ||  |||| || ||  | || |||||  | || || |||
Db      1 ATGAAAAATAATATTTTAGTAATATTGATTATTTCATTATTTATCAATTAAATTAAATCT 60

Qy     61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120
          ||||| |||||||| ||||| || || ||||| || ||| | || || || || |||||
Db     61 GCTAATTGTCCTGTTGGAACTGAAACTAACACAGCCGGATAAGTTGATGATCTAGGAACT 120

Qy    121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180
          ||||| || ||||| || ||| |||| ||||| || || || || ||||||||||||||
Db    121 CCTGCAAATTGTGTTAATTGTTAGAAAAACTTTTATTATAATAATGCTGCTGCTTTCGTT 180

Qy    181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240
          ||||| |||  ||| ||||| |||||||  | || || || ||||| ||| | || ||
Db    181 CCTGGTGCTAGTACGTGTACACCTTGTCCATAAAAAAAAGATGCTGGTGCTTAACCAAAT 240

Qy    241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300
          || |||||||| |||||  | || ||  | |||||||| || || |||||||| |||||
Db    241 CCACCTGCTACTGCTAATTTAGTCACATAATGTAACGTTAAATGCCCTGCTGGTACCGCA 300

Qy    301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360
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Db    301 ATTGCAGGTGGAGCAACAGATTATGCAGCAATAATCACAGAATGTGTTAATTGTAGAATT 360

Qy    361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420
Db    361 AATTTTTATAATGAAAATGCTCCAAATTTTAATGCAGGTGCTAGTACATGCACAGCTTGT 420

Qy    421 CCTGTGAACCGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAG 480
Db    421 CCGGTAAACAGAGTTGGTGGTGCATTGACTGCTGGTAATGCCGCTACCATAGTCGCATAA 480

Qy    481 TGTAACGTGGCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTG 540
Db    481 TGTAACGTCGCATGTCCTACTGGTACTGCACTTGATGATGGAGTAACTACTGATTATGTT 540

Qy    541 CGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGAAACAACGGA 600
Db    541 AGATCATTCACAGAATGTGTTAAATGTAGACTTAACTTTTACTATAATGGTAATAATGGT 600

Qy    601 AACACCCCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCT 660
Db    601 AATACTCCTTTCAATCCAGGTAAAAGTTAATGCACACCTTGTCCGGCAATTAAACCTGCT 660

Qy    661 AACGTGGCTCAGGCTACCCTGGGAAACGACGCTACCATCACCGCTCAGTGTAACGTGGCT 720
Db    661 AATGTTGCTTAAGCTACTTTAGGTAATGATGCTACAATAACCGCATAATGTAACGTTGCA 720

Qy    721 TGTCCTGACGGAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACCGAG 780
Db    721 TGCCCTGATGGTACTATAAGTGCTGCTGGAGTAAATAATTGGGTAGCACAAAACACTGAA 780

Qy    781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840
Db    781 TGTACTAATTGTGCTCCTAACTTTTACAATAATAATGCTCCTAATTTCAATCCAGGTAAT 840

Qy    841 TCTACCTGTCTGCCTTGTCCTGCTAACAAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900
Db    841 AGTACATGCCTACCTTGCCCAGCAAATAAAGATTATGGTGCTGAAGCCACTGCAGGTGGT 900

Qy    901 GCTGCTACCCTGGCTAAGCAGTGTAACATCGCTTGTCCTGACGGAACCGCTATCGCTTCT 960
Db    901 GCCGCTACTTTAGCCAAATAATGTAATATTGCATGCCCTGATGGTACTGCAATTGCTAGT 960

Qy    961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020
Db    961 GGAGCAACTAATTATGTAATATTATAAACAGAATGTCTAAATTGTGCTGCTAACTTTTAT 1020

Qy   1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080
Db   1021 TTTGATGGTAATAATTTCTAGGCAGGAAGTAGTAGATGCAAAGCATGTCCAGCAAATAAA 1080

Qy   1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140
Db   1081 GTTTAAGGCGCTGTAGCAACTGCAGGTGGTACTGCTACTTTAATTGCATAATGTGCCCTT 1140

Qy   1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200
Db   1141 GAATGCCCTGCTGGTACTGTACTCACCGATGGAACAACATCTACTTATAAATAAGCAGCA 1200

Qy   1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260
Db   1201 TCTGAATGTGTTAAATGTGCTGCCAACTTTTATACTACAAAATAAACTGATTGGGTAGCA 1260

Qy   1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
Db   1261 GGTATTGATACATGTACTAGTTGTAATAAAAAATTAACTTCTGGCGCTGAAGCTAATTTA 1320

Qy   1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380
Db   1321 CCTGAATCTGCTAAAAAAAATATATAATGTGATTTCGCTAATTTTTTATCAATTTCCTTA 1380

Qy   1381 CTGCTGATCTCTTACTA 1397
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Db   1381 TTATTGATTTCTTATTA 1397


RESULT 6
AAA52136
ID   AAA52136 standard; DNA; 1404 BP.
XX
AC   AAA52136;
XX
DT   04-DEC-2000  (first entry)
XX
DE   55 kDa i-antigen gene.
XX
KW   BTU1; beta-tubulin; protein expression system; negative selection;
KW   paclitaxel sensitivity; cell surface; antigen; protozoa; ciliate;
KW   live vaccine; Ichthyophthiius multifiliis; immobilization-antigen;
KW   i-antigen; freshwater; fish; protozoacide; ds.
XX
OS   Ichthyophthiius multifiliis.
XX
FH   Key             Location/Qualifiers
FT   CDS             1..1404
FT                   /*tag= a
FT                   /codon= (seq:"TAA", aa:Gln)
FT                   /product= 55_kDa_i-antigen
FT                   /partial
XX
PN   WO200046381-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02966.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (GAER/) GAERTIG J.
PA   (DICK/) DICKERSON H W.
PA   (CLAR/) CLARK T G.
XX
PI   Gaertig J,  Dickerson HW,  Clark TG;
XX
DR   WPI; 2000-514962/46.
DR   P-PSDB; AAY97177.
XX
PT   Recombinant expression systems for expressing heterologous nucleic
PT   acids and producing recombinant protein, comprises nonpathogenic
PT   protozoa such as Tetrahymena resistant to paclitaxel
XX
PS   Disclosure; Fig 3B; 83pp; English.
XX
CC   Tetrahymena thermophila expresses two major beta-tubulin genes (BTU1 and
CC   BTU2), which encode identical beta-tubulin proteins. Either of these two
CC   genes (but not both at once) can be disrupted without a detectable change
CC   in the cell phenotype. A K350L substitution in the BTU1 beta-tubulin
CC   protein confers increased resistance to microtubule-depolymerizing drugs
CC   and increased sensitivity to paclitaxel, a microtubule-stabilizing drug.
CC   Cells carrying the Btu1-1K350M allele can be transformed to paclitaxel
CC   resistance by gene replacement of Btu1-1K350M with a wild-type BTU1 gene
CC   fragment, eliminating the need to incorporate a means for positive
CC   selection. Where the host organism is not a T. thermophila mutant
CC   containing the Btu1-1K350M allele, BTU1::neo1 construct, which
CC   substitutes the coding region of the neo1 gene (conferring resistance to
CC   parmomycin) for that of BTU1, can be used to generate BTU1 gene knockouts
CC   and for positive selection. Heterologous nucleic acids (especially
CC   encoding antigenic polypeptides) can be inserted into a BTU gene for
CC   successful cell-surface expression that is maintained by way of negative
CC   selection. Preferred expression vectors disrupt the Btu1-1K350M gene by
CC   homologous recombination-mediated insertion of a heterologous nucleic
CC   acid, thereby restoring resistance to paclitaxel in the resulting
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CC   transgenic host. Transgenic ciliated protozoa are useful as live vaccines
CC   for stimulating an immune response in a vertebrate. The transgenic
CC   protozoan host cells are also useful for producing polyclonal antibodies
CC   (claimed). In particular, Tetrahymena expressing Ichthyophthiius
CC   multifiliis immobilization-antigen (i-antigen) protein on their surface
CC   are effective vehicles for vaccination of freshwater fish against
CC   infection by I. multifiliis.
XX
SQ   Sequence 1404 BP; 447 A; 241 C; 256 G; 460 T; 0 other;

  Query Match             55.5%;  Score 782.6;  DB 21;  Length 1404;
  Best Local Similarity   72.5%;  Pred. No. 9.6e-216;
  Matches 1013;  Conservative    0;  Mismatches  384;  Indels    0;  Gaps    0;

Qy      1 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60
          ||||| || || ||  | || ||  |||| || ||  | || |||||  | || || |||
Db      1 ATGAAAAATAATATTTTAGTAATATTGATTATTTCATTATTTATCAATTAAATTAAATCT 60

Qy     61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTGGACGACCTGGGAACC 120
          ||||| |||||||| |||| || || ||||| || ||| | || || || || |||||
Db     61 GCTAATTGTCCTGTTGGAACTGAAACTAACACAGCCGGATAAGTTGATGATCTAGGAACT 120

Qy    121 CCTGCTAACTGTGTGAACTGTCAGAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTG 180
          |||||  || |||||  || ||| |||| ||||| || || || || ||||||||||||||
Db    121 CCTGCAAATTGTGTTAATTGTTAGAAAAACTTTTATTATAATAATGCTGCTGCTTTCGTT 180

Qy    181 CCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGCTGGAGCTCAGCCTAAC 240
          |||||  |||  ||| |||| ||||||||  | || || || |||||  ||| | || ||
Db    181 CCTGGTGCTAGTACGTGTACACCTTGTCCATAAAAAAAAGATGCTGGTGCTTAACCAAAT 240

Qy    241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCT 300
          || |||||||| |||||  | || ||  | |||||||| || || |||||||| |||||
Db    241 CCACCTGCTACTGCTAATTTAGTCACATAATGTAACGTTAAATGCCCTGCTGGTACCGCA 300

Qy    301 ATCGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATC 360
          || || || ||||| || || || || || || ||||| || ||||| || ||| | ||
Db    301 ATTGCAGGTGGAGCAACAGATTATGCAGCAATAATCACAGAATGTGTTAATTGTAGAATT 360

Qy    361 AACTTCTACAACGAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGT 420
          || || || || || || ||||| || || || || || ||| ||| || || ||||||
Db    361 AATTTTTATAATGAAAATGCTCCAAATTTTAATGCAGGTGCTAGTACATGCACAGCTTGT 420

Qy    421 CCTGTGAACCGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAG 480
          || || ||| | || || || ||  |||| ||||| || || |||||||| || ||  |
Db    421 CCGGTAAACAGAGTTGGTGGTGCATTGACTGCTGGTAATGCCGCTACCATAGTCGCATAA 480

Qy    481 TGTAACGTGGCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTG 540
          |||||||| || |||||||| || || || || || || ||||| || || || || || ||
Db    481 TGTAACGTCGCATGTCCTACTGGTACTGCACTTGATGATGGAGTAACTACTGATTATGTT 540

Qy    541 CGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGAAACAACGGA 600
            | || ||||| || ||||| || ||| | || ||||| ||||| || || || || || ||
Db    541 AGATCATTCACAGAATGTGTTAAATGTAGACTTAACTTTTACTATAATGGTAATAATGGT 600

Qy    601 AACACCCCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCT 660
          || || |||||||| || || ||    | | || || |||||||| || || || ||||||
Db    601 AATACTCCTTTCAATCCAGGTAAAAGTTAATGCACACCTTGTCCCGCAATTAAACCTGCT 660

Qy    661 AACGTGGCTCAGGCTACCCTGGGAAACGACGCTACCATCACCGCTCAGTGTAACGTGGCT 720
          || || ||| | |||||  | || || || ||||| || |||||  | |||||||| ||
Db    661 AATGTTGCTTAAGCTACTTTAGGTAATGATGCTACAATAACCGCATAATGTAACGTTGCA 720

Qy    721 TGTCCTGACGGAACCATCTCTGCTGCTGGAGTGAACAACTGGGTGGCTCAGAACACCGAG 780
          || ||||| || || ||   |||||||||||| || || ||||| || || ||||| ||
Db    721 TGCCCTGATGGTACTATAAGTGCTGCTGGAGTAAATAATTGGGTAGCACAAAACACTGAA 780

Qy    781 TGTACCAACTGTGCTCCTAACTTCTACAACAACAACGCTCCTAACTTCAACCCTGGAAAC 840
          ||||| || |||||||||||||| ||||| || || |||||||| ||||| || || ||
Db    781 TGTACTAATTGTGCTCCTAACTTTTACAATAATAATGCTCCTAATTTCAATCCAGGTAAT 840

Qy    841 TCTACCTGTCTGCCTTGTCCTGCTAACAAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900
            ||| || || ||||| || || || || || || || ||||| || || || || ||
Db    841 AGTACATGCCTACCTTGCCCAGCAAATAAAGATTATGGTGCTGAAGCCACTGCAGGTGGT 900

Qy    901 GCTGCTACCCTGGCTAAGCAGTGTAACATCGCTTGTCCTGACGGAACCGCTATCGCTTCT 960
          || ||||| | || ||  | ||||| || || || ||||| || || || || ||| |
Db    901 GCCGCTACTTTAGCCAAATAATGTAATATTGCATGCCCTGATGGTACTGCAATTGCTAGT 960

Qy    961 GGAGCTACCAACTACGTGATCCTGCAGACCGAGTGTCTGAACTGTGCTGCTAACTTCTAC 1020
          ||||| || || || || ||  | | || || ||||| || |||||||||||||| ||
Db    961 GGAGCAACTAATTATGTAATATTATAAACAGAATGTCTAAATTGTGCTGCTAACTTTTAT 1020

Qy   1021 TTCGACGGAAACAACTTCCAGGCTGGATCTTCTCGCTGTAAGGCTTGTCCTGCTAACAAG 1080
          || || || || || ||| |||| |||  | | || || || |||||  || || ||
Db   1021 TTTGATGGTAATAATTTCTAGGCAGGAAGTAGTAGATGCAAAGCATGTCCAGCAAATAAA 1080

Qy   1081 GTGCAGGGAGCTGTGGCTACCGCTGGAGGAACCGCTACCCTGATCGCTCAGTGTGCTCTG 1140
          ||  | || ||||| || || || || || || ||||  | || ||  | ||||| ||
Db   1081 GTTTAAGGCGCTGTAGCAACTGCAGGTGGTACTGCTACTTTAATTGCATAATGTGCCCTT 1140

Qy   1141 GAGTGTCCTGCTGGAACCGTGCTGACCGACGGAACCACCTCTACCTACAAGCAGGCTGCT 1200
          || || |||||||| || || || ||||| ||||| || ||||| || ||  | || ||
Db   1141 GAATGCCCTGCTGGTACTGTACTCACCGATGGAACAACATCTACTTATAAATAAGCAGCA 1200

Qy   1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGCAGACCGACTGGGTGGCT 1260
          ||||| ||||| || |||||||| ||||| || || || ||  | || || ||||| ||
Db   1201 TCTGAATGTGTTAAATGTGCTGCCAACTTTTATACTACAAAATAAACTGATTGGGTAGCA 1260

Qy   1261 GGAATCGACACCTGTACCTCTTGTAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
          || || || || |||||   |||||| || ||  | || ||||| ||||| |||||  |
Db   1261 GGTATTGATACATGTACTAGTTGTAATAAAAAATTAACTTCTGGCGCTGAAGCTAATTTA 1320

Qy   1321 CCTGAGTCTGCTAAGAAGAACATCCAGTGTGACTTCGCTAACTTCCTGTCTATCTCTCTG 1380
          ||||| |||||||| || || ||  | ||||| |||||||| ||  | || || ||  |
Db   1321 CCTGAATCTGCTAAAAAAAATATATAATGTGATTTCGCTAATTTTTTATCAATTTCCTTA 1380

Qy   1381 CTGCTGATCTCTTACTA 1397
            |  |||| ||||| ||
Db   1381 TTATTGATTTCTTATTA 1397


RESULT 7
AAA97075
ID   AAA97075 standard; DNA; 138 BP.
XX
AC   AAA97075;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3205.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
```

DR WPI; 2000-506071/45.
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
XX
PS Disclosure; Figure 12; 144pp; English.
XX
CC This invention relates to novel i-antigen polypeptide sequences.
CC I-antigens or immobilisation antigens ar common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 138 BP; 30 A; 43 C; 32 G; 33 T; 0 other;

Query Match 9.8%; Score 138; DB 21; Length 138;
Best Local Similarity 100.0%; Pred. No. 7.1e-30;
Matches 138; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy    313 GCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATCAACTTCTACAAC 372
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 GCTACCGACTACGCTGCTATCATCACCGAGTGTGTGAACTGTCGCATCAACTTCTACAAC 60

Qy    373 GAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGTCCTGTGAACCGC 432
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     61 GAGAACGCTCCTAACTTCAACGCTGGAGCTTCTACCTGTACCGCTTGTCCTGTGAACCGC 120

Qy    433 GTGGGAGGAGCTCTGACC 450
          ||||||||||||||||||
Db    121 GTGGGAGGAGCTCTGACC 138
```

RESULT 8
AAA97076/c
ID AAA97076 standard; DNA; 123 BP.
XX
AC AAA97076;
XX
DT 18-DEC-2000 (first entry)
XX
DE G5 synthetic gene synthesis primer 3206.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
OS Synthetic.
XX
PN WO200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.
XX
PI Clark TG, Dickerson HW, Lin T;
XX
DR WPI; 2000-506071/45.
XX
PT Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
XX
PS Disclosure; Figure 12; 144pp; English.
XX
CC This invention relates to novel i-antigen polypeptide sequences.
CC I-antigens or immobilisation antigens ar common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kD. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 123 BP; 25 A; 37 C; 39 G; 22 T; 0 other;

Query Match 8.7%; Score 123; DB 21; Length 123;
Best Local Similarity 100.0%; Pred. No. 1.5e-25;
Matches 123; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy    430 CGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAGTGTAACGTG 489
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    123 CGCGTGGGAGGAGCTCTGACCGCTGGAAACGCTGCTACCATCGTGGCTCAGTGTAACGTG 64

Qy    490 GCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTGCGCTCTTTC 549
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     63 GCTTGTCCTACCGGAACCGCTCTGGACGACGGAGTGACCACCGACTACGTGCGCTCTTTC 4

Qy    550 ACC 552
          |||
Db      3 ACC 1
```

RESULT 9
AAA97071
ID AAA97071 standard; DNA; 117 BP.
XX
AC AAA97071;
XX
DT 18-DEC-2000 (first entry)
XX
DE G5 synthetic gene synthesis primer 3201.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.

```
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
PT   Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT   multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT   infection in fish  -
XX
PS   Disclosure; Figure 12; 144pp; English.
XX
CC   This invention relates to novel i-antigen polypeptide sequences.
CC   I-antigens or immobilisation antigens ar common to a variety of
CC   hymenostomatid ciliates and their expression varies in response to
CC   environmental stimuli. This invention relates to i-antigens in
CC   Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC   of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
CC   antibodies capable of binding to the nucleotide sequences and a method
CC   for identifying I. multifiliis serotypes using the nucleotide sequences.
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CC   an immune response in fish is useful for prophylaxis, treatment or for
CC   controlling I. multifiliis infection in fish. Polynucleotide or protein
CC   vaccines comprising a portion of the amplified product encoding an
CC   antigenic i-antigen polypeptide obtained is also useful for treating or
CC   preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 117 BP; 34 A; 30 C; 26 G; 27 T; 0 other;

  Query Match             7.4%;  Score 105;  DB 21;  Length 117;
  Best Local Similarity   100.0%;  Pred. No. 2.3e-20;
  Matches  105;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       1 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 60
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      13 ATGAAGAACAACATCCTGGTGATCCTGATCATCTCTCTGTTCATCAACCAGATCAAGTCT 72

Qy      61 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTG 105
           |||||||||||||||||||||||||||||||||||||||||||||
Db      73 GCTAACTGTCCTGTGGGAACCGAGACCAACACCGCTGGACAGGTG 117


RESULT 10
AAA97072/c
ID   AAA97072 standard; DNA; 104 BP.
XX
AC   AAA97072;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3202.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
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CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
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CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 104 BP; 21 A; 27 C; 30 G; 26 T; 0 other;

  Query Match             7.4%;  Score 104;  DB 21;  Length 104;
  Best Local Similarity   100.0%;  Pred. No. 4.2e-20;
  Matches  104;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy      84 GACCAACACCGCTGGACAGGTGGACGACCTGGGAACCCCTGCTAACTGTGTGAACTGTCA 143
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     104 GACCAACACCGCTGGACAGGTGGACGACCTGGGAACCCCTGCTAACTGTGTGAACTGTCA 45

Qy     144 GAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTGCCTGGAG 187
           |||||||||||||||||||||||||||||||||||||||||||||
Db      44 GAAGAACTTCTACTACAACAACGCTGCTGCTTTCGTGCCTGGAG 1
```

```
RESULT 11
AAA97073
ID   AAA97073 standard; DNA; 100 BP.
XX
AC   AAA97073;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3203.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
PA   (DICK/) DICKERSON H W.
PA   (LINT/) LIN T.
XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
PT   Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT   multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT   infection in fish  -
XX
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CC   environmental stimuli. This invention relates to i-antigens in
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CC   of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
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CC   an immune response in fish is useful for prophylaxis, treatment or for
CC   controlling I. multifiliis infection in fish. Polynucleotide or protein
CC   vaccines comprising a portion of the amplified product encoding an
CC   antigenic i-antigen polypeptide obtained is also useful for treating or
CC   preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 100 BP; 16 A; 35 C; 24 G; 25 T; 0 other;

  Query Match             7.1%;  Score 100;  DB 21;  Length 100;
  Best Local Similarity   100.0%;  Pred. No. 5.9e-19;
  Matches  100;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy    165 CGCTGCTGCTTTCGTGCCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGC 224
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 CGCTGCTGCTTTCGTGCCTGGAGCTTCTACCTGTACCCCTTGTCCTCAGAAGAAGGACGC 60

Qy    225 TGGAGCTCAGCCTAACCCTCCTGCTACCGCTAACCTGGTG 264
              ||||||||||||||||||||||||||||||||||||||||
Db     61 TGGAGCTCAGCCTAACCCTCCTGCTACCGCTAACCTGGTG 100


RESULT 12
AAA97080/c
ID   AAA97080 standard; DNA; 100 BP.
XX
AC   AAA97080;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3210.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
PA   (CORR ) CORNELL RES FOUND INC.
PA   (CLAR/) CLARK T G.
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XX
PI   Clark TG,  Dickerson HW,  Lin T;
XX
DR   WPI; 2000-506071/45.
XX
PT   Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT   multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
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XX
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CC   invention includes two polypeptide and polynucleotide sequences for two
CC   i-antigens, of 48 and 55 kD. Also included in the invention are
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CC   vaccines comprising a portion of the amplified product encoding an
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CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
```

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SQ   Sequence 100 BP; 22 A; 17 C; 32 G; 29 T; 0 other;

  Query Match             7.1%;  Score 100;  DB 21;  Length 100;
  Best Local Similarity   100.0%;  Pred. No. 5.9e-19;
  Matches  100;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy    753 GAACAACTGGGTGGCTCAGAACACCGAGTGTACCAACTGTGCTCCTAACTTCTACAACAA 812
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    100 GAACAACTGGGTGGCTCAGAACACCGAGTGTACCAACTGTGCTCCTAACTTCTACAACAA 41

Qy    813 CAACGCTCCTAACTTCAACCCTGGAAACTCTACCTGTCTG 852
          |||||||||||||||||||||||||||||||||||||||
Db     40 CAACGCTCCTAACTTCAACCCTGGAAACTCTACCTGTCTG 1


RESULT 13
AAA97077
ID   AAA97077 standard; DNA; 99 BP.
XX
AC   AAA97077;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3207.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
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XX
PI   Clark TG,  Dickerson HW,  Lin T;
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DR   WPI; 2000-506071/45.
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CC   i-antigens, of 48 and 55 kD. Also included in the invention are
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CC   antigenic i-antigen polypeptide obtained is also useful for treating or
CC   preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC   fragments identified in the invention. Sequences AAA97043-A97064
CC   (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC   isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC   AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ   Sequence 99 BP; 27 A; 29 C; 21 G; 22 T; 0 other;

  Query Match             7.0%;  Score 99;  DB 21;  Length 99;
  Best Local Similarity   100.0%;  Pred. No. 1.1e-18;
  Matches   99;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy    532 GACTACGTGCGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGA 591
          |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      1 GACTACGTGCGCTCTTTCACCGAGTGTGTGAAGTGTCGCCTGAACTTCTACTACAACGGA 60

Qy    592 AACAACGGAAACACCCCTTTCAACCCTGGAAAGTCTCAG 630
          |||||||||||||||||||||||||||||||||||||||
Db     61 AACAACGGAAACACCCCTTTCAACCCTGGAAAGTCTCAG 99


RESULT 14
AAA97074/c
ID   AAA97074 standard; DNA; 95 BP.
XX
AC   AAA97074;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3204.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
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```

```
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XX
SQ   Sequence 95 BP; 22 A; 24 C; 30 G; 19 T; 0 other;

  Query Match             6.7%;  Score 95;  DB 21;  Length 95;
  Best Local Similarity   100.0%;  Pred. No. 1.6e-17;
  Matches   95;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy     242 CTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCTA 301
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      95 CTCCTGCTACCGCTAACCTGGTGACCCAGTGTAACGTGAAGTGTCCTGCTGGAACCGCTA 36

Qy     302 TCGCTGGAGGAGCTACCGACTACGCTGCTATCATC 336
           ||||||||||||||||||||||||||||||||||
Db      35 TCGCTGGAGGAGCTACCGACTACGCTGCTATCATC 1


RESULT 15
AAA97078/c
ID   AAA97078 standard; DNA; 95 BP.
XX
AC   AAA97078;
XX
DT   18-DEC-2000  (first entry)
XX
DE   G5 synthetic gene synthesis primer 3208.
XX
KW   Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW   white spot disease; freshwater fish; immune response; infection control;
KW   PCR primer; ss.
XX
OS   Synthetic.
XX
PN   WO200046373-A1.
XX
PD   10-AUG-2000.
XX
PF   04-FEB-2000; 2000WO-US02962.
XX
PR   04-FEB-1999;   99US-0118634.
PR   02-MAR-1999;   99US-0122372.
PR   17-MAR-1999;   99US-0124905.
PR   27-APR-1999;   99US-0131121.
XX
PA   (UYGE-) UNIV GEORGIA RES FOUND INC.
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CC   and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
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XX
SQ   Sequence 95 BP; 22 A; 19 C; 33 G; 21 T; 0 other;

  Query Match             6.7%;  Score 95;  DB 21;  Length 95;
  Best Local Similarity   100.0%;  Pred. No. 1.6e-17;
  Matches   95;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy     607 CCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCTAACGTG 666
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      95 CCTTTCAACCCTGGAAAGTCTCAGTGTACCCCTTGTCCTGCTATCAAGCCTGCTAACGTG 36

Qy     667 GCTCAGGCTACCCTGGGAAACGACGCTACCATCAC 701
           ||||||||||||||||||||||||||||||||||
Db      35 GCTCAGGCTACCCTGGGAAACGACGCTACCATCAC 1


Search completed: February 16, 2003, 17:00:43
Job time : 222.94 secs
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